

CEREAL PRODUCTION

VULNERABILITY RATING
(Low—High)



PROGNOSIS

With increasing temperatures and growing degree days and a reduction in frost risk, cereal production is could potentially expand into new territory across the region. However, as a result of increased rainfall intensity and longer periods of low rainfall throughout the region, growers will need to focus on erosion control and water management.



THE FUTURE OF CEREAL PRODUCTION IN THE CRADLE COAST REGION

The three main cereal crops grown in Tasmania are wheat, barley and oats. Cereal crops are versatile, being able to be grown as both fodder and cash crops¹, although barley in Tasmania is mainly grown for grain¹.

The entire Cradle Coast NRM region is projected to have an increase in temperature of 2.6 to 3.3°C, which is similar to the rest of the state². Changes in rainfall, however, will vary across the region (Figure 1.) In zone 1 rainfall is expected to increase up to 20% in winter and spring and decrease by 10-20% during summer and autumn. In zone 2 there will be an increase in summer and winter rainfall by up to 10% and a slight decrease in the spring, however, little change is expected during autumn¹.

These changes in rainfall are expected to generate more intense downpours along with longer dry periods¹ which could have impacts

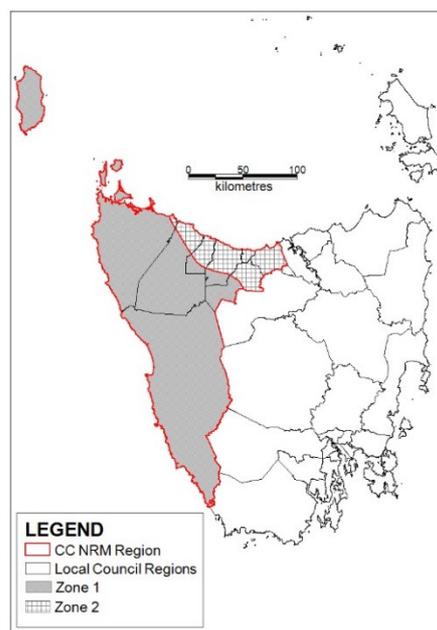


Figure 1. Cradle Coast Region depicting Zones 1 and 2.

¹ Hall, 2006

² Holz et al., 2010

on the cereal industry. All cereals are susceptible to water logging¹. This increase in rainfall intensity is also likely to increase the risk of soil erosion. The increase in summer rain projected in zone 2 could also present harvesting challenges due to high humidity³.

Frost during flowering is detrimental to cereal crops resulting in seed abortion¹ Frost risk days are projected to decrease significantly across the entire region² (Figure 2) and may allow growers to consider new growing sites.

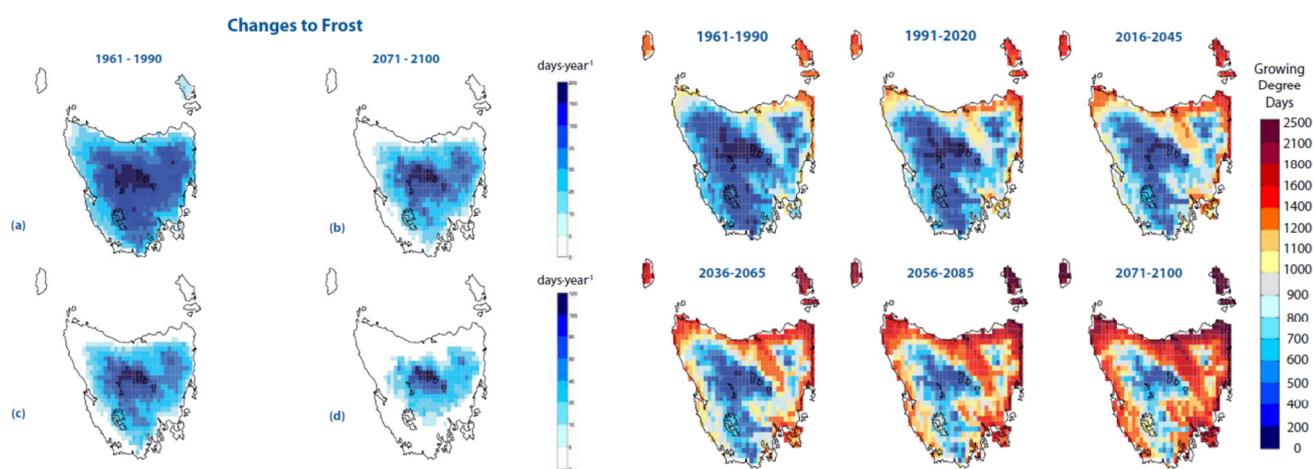


Figure 2. Frost incidence under the A2 emissions scenario. (a) and (b) days with less than 2°C per year (c) and (d) days with less than 0°C per year. Source: Holz et al., 2010.

Figure 3. Annual growing degree days under the A2 emissions scenario.

Another major contributing factor to crop growth is the number of growing degree days (GDD). Growing degree days, also referred to as growing degree units, is a measure of the heat required to grow and ripen crops². Under climate change GDDs are projected to increase across the region (Figure 3).

ADAPTATION OPTIONS FOR CEREAL PRODUCERS

- ⇒ Adapting planting times and changing to better adapted cultivars.
- ⇒ With higher winter rainfall, reduce plantings on areas with poor drainage, or improve drainage infrastructure (surface and underground drains).
- ⇒ Managing soil erosion risk through landscaping including the use of cereal straw on rip lines.
- ⇒ Exploring potential for land use change, particularly in regions currently limited by temperature and frost incidence and summer rainfall during harvesting in zone 1.

³ D. Armstrong (personal communication 29.4.2014)

- ⇒ Precision agriculture up take including controlled traffic farming (CTF) systems.
- ⇒ Awareness of and monitoring for pests and disease.
- ⇒ Water management through increasing capacity to capture runoff as drier summers place additional pressure on irrigation systems in zone 1.

It is expected that generally a combination of adaptation strategies will work best and there will be overlap between the benefits of adaptation for various crops.

REFERENCES

Hall, E, 2006, *Species for Profit - A Guide for Tasmanian Pastures and Field Crops*, Edited by Jonathan Knox, Robin Thompson and Sarah Campbell, Department of Primary Industries Water and Environment, Tasmania, pp. 108

Holz GK, Grose MR, Bennett JC, Corney SP, White CJ, Phelan D, Potter K, Kriticos D, Rawnsley R, Parsons D, Lisson S, Gaynor SM & Bindoff NL 2010, *Climate Futures for Tasmania: impacts on agriculture technical report*, Antarctic Climate and Ecosystems Cooperative Research Centre, Hobart, Tasmania

Image: Cotching, B., Sparrow, L., and Kerlake, F., 2012, *Cereal growing in Tasmania*, Wealth from Water factsheet, Tasmanian Institute of Agriculture